

## CLAIM AMENDMENTS

1           1. (currently amended) ~~Method of~~ A method for cultivating  
2 ~~cells of the most diverse type, particularly~~ human or animal cells,  
3 one culture each of cells of at least one specific type being  
4 established in a defined environment and the ~~cells of the relevant~~  
5 ~~culture~~ cell cultures being supplied with assigned, liquid nutrient  
6 media, growth factors, and ~~gases and the like in the process,~~  
7 ~~characterized by a combination of the following processing steps~~  
8 which comprises the steps of:

9           a) ~~Preparing of~~ establishing at least one cell culture  
10 inside at least one cell culture chamber (20) of a cell culture  
11 system (30);

12           b) ~~Starting of~~ starting a flow of freely selectable,  
13 defined, liquid media in the at least one cell culture chamber (20)  
14 in order to ensure a continuous supply for the at least one cell  
15 culture;

16           c) ~~Starting of~~ starting a flow of different gases with  
17 freely selectable concentrations into the at least one cell culture  
18 chamber (20) in order to ensure a constant, continuous gassing of  
19 the at least one cell culture;

20           d) ~~Regulated and/or controlled heating of~~ heating the at  
21 least one cell culture chamber (20) in a regulated or controlled  
22 manner in such a way so as to ensure a constant temperature there  
23 over the duration of an experiment;

24 e) ~~Permanent microscopic observation of permanently~~  
25 microscopically observing the at least one cell culture inside the  
26 at least one cell culture chamber (20), without samples of the cell  
27 culture being taken over the duration of an experiment, wherein a  
28 camera with a microscope attachment on a displaceable table moves  
29 past the cell culture chambers (12) while programming on software  
30 movement positions of the camera; and

31 f) ~~Permanent measuring of permanently measuring~~ all  
32 relevant cell culture parameters relevant to treating inflammation,  
33 cancer, cardiovascular disease, AIDS, relevant to programmed cell  
34 death, or relevant to blood coagulation, by means of suitable  
35 sensors integrated in the at least one cell culture chamber (20).

1 2. (Currently amended) Method The method according to  
2 claim 1, ~~characterized by the fact in~~ that a given number of cell  
3 cultures is established inside accordingly assigned cell culture  
4 chambers (20), these cell culture chambers being connected in  
5 series.

1 3. (Currently amended) Method The method according to  
2 claim 1, ~~characterized by the fact in~~ that a given number of cell  
3 cultures is established inside accordingly assigned cell culture  
4 chambers (20), these cell culture chambers being connected in  
5 parallel.

1           4. (currently amended) Method The method according to  
2 claim 1, characterized ~~by the fact~~ in that the type of liquid  
3 media and/or ~~their directions of flow~~ the flow directions thereof  
4 and/or ~~[[their]]~~ the distribution thereof and/or ~~[[their]]~~ the flow  
5 volumes can be varied over the duration of an experiment.

1           5. (currently amended) Method The method according to  
2 claim 1, characterized ~~by the fact~~ in that in the case of cell  
3 culture chambers connected in series, the liquid media are  
4 continuously passed on from cell culture chamber to cell culture  
5 chamber ~~when the cell culture chambers are connected in series~~.

1           6. (currently amended) Method The method according to  
2 claim 1, characterized ~~by the fact~~ in that the type of gases and/or  
3 ~~their directions of flow~~ the flow directions thereof and/or  
4 ~~[[their]]~~ the distribution thereof and/or the gassing  
5 concentrations ~~can be~~ are varied over the duration of an  
6 experiment.

1           7. (currently amended) Method The method according to  
2 claim 2, characterized ~~by the fact~~ in that in the case of cell  
3 culture chambers (20) connected in series the gases are  
4 continuously passed on from cell culture chamber to cell culture  
5 chamber ~~when the cell culture chambers (20) have been connected in~~  
6 ~~series~~.

1           8. (currently amended) Method The method according to  
2 claim 1, characterized by ~~the fact~~ in that the temperature  
3 prevailing in the at least one cell culture inside within the at  
4 least one cell culture chamber (20) is measured permanently and  
5 input as an actual temperature value into a corresponding  
6 temperature adjusting circuit and/or control circuit ~~; this enables~~  
7 thus enabling a corresponding adjustment and/or control of the  
8 heating of the cell culture chamber.

1           9. (Currently amended) Method The method according to  
2 claim 1, characterized by the fact that one cell culture of a  
3 different type each is established on both sides of a gas-permeable  
4 membrane inside within at least one cell culture chamber (20) for  
5 the purpose of a direct co-cultivation of both cell cultures.

1           10. (Currently amended) Method The method according to  
2 claim 9, characterized by ~~[[the]]~~ starting ~~[[of]]~~ a first flow of  
3 media to ~~[[the]]~~ one side of the membrane, ~~[[i.e.]]~~ namely, the  
4 apical side with the first cell culture, and of a second flow of  
5 media that differs from the first ~~[[one]]~~ flow of media to the  
6 other side of the membrane, ~~[[i.e.]]~~ namely, the basolateral side,  
7 with the second cell culture.

1           11. (currently amended) ~~Method~~ The method according to  
2 claim 1, characterized by ~~[[the]]~~ application of ~~[[the]]~~ a method  
3 for indirect co-cultivation, different biological systems ~~(i.e.~~  
4 ~~types of tissue/cells)~~ being connected in series in corresponding  
5 cell culture chambers (20).

1           12. (currently amended) ~~Method~~ The method according to  
2 claim 1, characterized by a video-supported microscopic observation  
3 of the at least one cell culture in the at least one cell culture  
4 chamber (20).

1           13. (currently amended) Method according to claim 1,  
2 characterized ~~by the fact~~ in that all data that are obtained by  
3 ~~[[A]]~~ permanent microscopic observation of the at least one cell  
4 culture ~~inside~~ within the at least one cell culture chamber (20)  
5 and/or

6           [[A]] permanent measuring of the relevant cell culture  
7 parameters defined in step (f) and/or

8           [[A]] permanent measuring of the temperature in the at  
9 least one cell culture inside the at least one cell culture chamber  
10 (20),

11           [[and]] are transmitted to a computer-controlled  
12 monitoring and control system (G) for further processing there.

1           14. (Currently amended) ~~Method~~ The method according to  
2 claim 13, characterized ~~by the fact~~ in that the permanent measuring  
3 of the relevant cell culture parameters is carried out by means of  
4 a software-aided measuring method.

1           15. (New) The method according to claim 1, wherein  
2 in step (e) during the permanent microscopic observation  
3 the at least one cell culture inside the at least one cell culture  
4 chamber (20), wherein the camera with a microscopic attachment on a  
5 displaceable table moves past the cell culture chamber (12) while  
6 programming on computer software, movement positions of the camera,  
7 further comprising the steps of determining cell contours during  
8 movement of the camera, storing the determined cell contours on the  
9 computer software, and recognizing those stored determined cell  
10 contours when the camera again moves past the cell culture chamber  
11 later on during the observation.

1           16. (New) The method according to claim 1, wherein in  
2 step (f) the relevant cell culture parameters measured are pH  
3 values, lactate values or electrical potentials.